IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: GUEGLER et al.

MAY 1 0 2001 THE TRADEMARK OF THE PROPERTY OF

Serial No.09/749,589

Filed: December 28, 2000

For: ISOLATED HUMAN TRANSPORTER PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN TRANSPORTER PROTEINS, AND USES THEREOF

Art Unit:

Examiner:

Atty. Docket: CL000861

SUBMISSION OF SEQUENCE LISTING UNDER 37 C.F.R. § 1.821(a)

Honorable Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir:

In compliance with 37 C.F.R. § 1.821(a), Applicants submit the Sequence Listing, including the paper copy of the Sequence Listing and the computer readable copy of the Sequence Listing.

In the Specification:

Please enter the Sequence Listing between the specification and the claims of the above-identified application.

REMARKS

In accordance with 37 C.F.R. § 1.821(f), the paper copy of the Sequence Listing and the computer readable copy of the Sequence Listing submitted herewith in the above application are the same.

In accordance with 37 C.F.R. § 1.821(g), this submission includes no new matter.

It is respectfully believed this application is now in condition for examination.

Early notice to this effect is earnestly solicited.

Respectfully submitted,

CELERA GENOMICS

Robert A. Millman

Reg. No. 36,217

Date: May 10, 2001

Celera Genomics Corporation 45 West Gude Drive, C2-4#20

Rockville, MD 20850 Tel: 240-453-3067 Fax: 240-453-3084



```
<110> GUEGLER, Karl et al
```

<120> ISOLATED HUMAN TRANSPORTER PROTEINS, NUCLEIC ACID MOLECULES ENCODING HUMAN TRANSPORTER PROTEINS, AND USES THEREOF

<130> CL000861

<140> 09/749,589

<141> 2000-12-28

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2262

<212> DNA

<213> Human

<400> 1

atgagecage ceaggeceeg etacgtggta gacagageeg catacteect taccetette 60 gacgatgagt ttgagaagaa ggaccggaca tacccagtgg gagagaaact tcgcaatgcc 120 ttcagatgtt cctcagccaa gatcaaagct gtggtgtttg ggctgctgcc tgtgctctcc 180 tggctcccca agtacaagat taaagactac atcattcctg acctgctcgg tggactcagc 240 gggggatcca tccaggtccc acaaggcatg gcatttgctc tgctggccaa ccttcctgca 300 gtcaatggcc tctactcctc cttcttcccc ctcctgacct acttcttcct ggggggtgtt 360 caccagatgg tgccaggtac ctttgccgtt atcagcatcc tggtgggtaa catctgtctg 420 cagctggccc cagagtcgaa attccaggtc ttcaacaatg ccaccaatga gagctatgtg 480 gacacagcag ccatggaggc tgagaggctg cacgtgtcaq ctacqctaqc ctqcctcacc 540 gccatcatcc agatgggtct gggcttcatg cagtttggct ttgtggccat ctacctctcc 600 gagtccttca tccggggctt catgacggcc gccqqcctqc aqatcctqat ttcqqtqctc 660 aagtacatct teggactgac catecectee tacacaggee cagggteeat egtetttace 720 ttcattgaca tttgcaaaaa cctcccccac accaacatcg cctcgctcat cttcgctctc 780 atcagcggtg ccttcctggt gctggtgaag gagctcaatg ctcgctacat gcacaagatt 840 cgcttcccca tccctacaga gatgattgtg gtggtggtgg caacagctat ctccgggggc 900 tgtaagatgc ccaaaaagta tcacatgcag atcgtgggag aaatccaacg cgggttcccc 960 accccggtgt cgcctgtggt ctcacagtgg aaggacatga taggcacagc cttctcccta 1020 gccatcgtga gctacgtcat caacctggct atgggccgga ccctggccaa caagcacggc 1080 tacgacgtgg attcgaacca ggagatgatc gctctcggct gcagcaactt ctttggctcc 1140 ttetttaaaa tteatgteat ttgetgtgeg etttetgtea etetggetgt ggatggaget 1200 ggaggaaaat cccaggtggc cagcctgtgt gtgtctctgg tggtgatgat caccatgctg 1260 gtcctgggga tctatctgta tcctctcct aagtctgtgc taggagccct gatcgctgtc 1320 aatctcaaga actccctcaa gcaactcacc gacccctact acctgtggag gaagagcaag 1380 ctggactgtt gcatctgggt agtgagcttc ctctcctcct tcttcctcag cctgccctat 1440 ggtgtggcag tgggtgtcgc cttctccgtc ctggtcgtgg tcttccagac tcagtttcga 1500 aatggctatg cactggccca ggtcatggac actgacattt atgtgaatcc caagacctat 1560 aatagggccc aggatatcca ggggattaaa atcatcacgt actgctcccc tctctacttt 1620 gccaactcag agatcttcag gcaaaaggtc atcgccaaga ctgtctccct gcaggagctg 1680 cagcaggact ttgagaatgc gcccccacc gaccccaaca acaaccagac cccggctaac 1740 ggcaccagcg tgtcctatat caccttcagc cctgacagct cctcacctgc ccagagtgag 1800 ccaccagect ccgctgaggc ccccggcgag cccagtgaca tgctggccag cgtcccaccc 1860 ttegteacet tecacaceet cateetggae atgagtggag teagettegt ggaettgatg 1920 ggcatcaagg ccctggccaa gctgagctcc acctatggga agatcggcgt gaaggtcttc 1980

ttggtgaaca tccatgccca ggtgtacaat gacattagcc atggaggcgt ctttgaggat 2040 gggagtctag aatgcaagca cgtctttccc agcatacatg acgcagtcct ctttgcccag 2100 gcaaatgcta gagacgtgac cccaggacac aacttccaag gggctccagg ggatgctgag 2160 ctctccttgt acgactcaga ggaggacatt cgcagctact gggacttaga gcaggagatg 2220 ttcgggagca tgtttcacgc agagaccctg accgccctqt qa <210> 2 <211> 753 <212> PRT <213> Human <400> 2 Met Ser Gln Pro Arg Pro Arg Tyr Val Val Asp Arg Ala Ala Tyr Ser 10 Leu Thr Leu Phe Asp Asp Glu Phe Glu Lys Lys Asp Arg Thr Tyr Pro Val Gly Glu Lys Leu Arg Asn Ala Phe Arg Cys Ser Ser Ala Lys Ile 40 Lys Ala Val Val Phe Gly Leu Leu Pro Val Leu Ser Trp Leu Pro Lys Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu Leu Gly Gly Leu Ser 70 75 Gly Gly Ser Ile Gln Val Pro Gln Gly Met Ala Phe Ala Leu Leu Ala 90 Asn Leu Pro Ala Val Asn Gly Leu Tyr Ser Ser Phe Phe Pro Leu Leu 100 105 Thr Tyr Phe Phe Leu Gly Gly Val His Gln Met Val Pro Gly Thr Phe 120 125 Ala Val Ile Ser Ile Leu Val Gly Asn Ile Cys Leu Gln Leu Ala Pro 135 140 Glu Ser Lys Phe Gln Val Phe Asn Asn Ala Thr Asn Glu Ser Tyr Val 150 155 Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu 165 170 Ala Cys Leu Thr Ala Ile Ile Gln Met Gly Leu Gly Phe Met Gln Phe 185 Gly Phe Val Ala Ile Tyr Leu Ser Glu Ser Phe Ile Arg Gly Phe Met 205 Thr Ala Ala Gly Leu Gln Ile Leu Ile Ser Val Leu Lys Tyr Ile Phe 215 220 Gly Leu Thr Ile Pro Ser Tyr Thr Gly Pro Gly Ser Ile Val Phe Thr 230 235 Phe Ile Asp Ile Cys Lys Asn Leu Pro His Thr Asn Ile Ala Ser Leu 245 250 Ile Phe Ala Leu Ile Ser Gly Ala Phe Leu Val Leu Val Lys Glu Leu 265 270 Asn Ala Arg Tyr Met His Lys Ile Arg Phe Pro Ile Pro Thr Glu Met 280 Ile Val Val Val Ala Thr Ala Ile Ser Gly Gly Cys Lys Met Pro 295 300 Lys Lys Tyr His Met Gln Ile Val Gly Glu Ile Gln Arg Gly Phe Pro 315 Thr Pro Val Ser Pro Val Val Ser Gln Trp Lys Asp Met Ile Gly Thr 325 330 Ala Phe Ser Leu Ala Ile Val Ser Tyr Val Ile Asn Leu Ala Met Gly

340 345 350 Arg Thr Leu Ala Asn Lys His Gly Tyr Asp Val Asp Ser Asn Gln Glu

```
355
                           360
Met Ile Ala Leu Gly Cys Ser Asn Phe Phe Gly Ser Phe Phe Lys Ile
                      375
                                           380
His Val Ile Cys Cys Ala Leu Ser Val Thr Leu Ala Val Asp Gly Ala
                   390
                                      395
Gly Gly Lys Ser Gln Val Ala Ser Leu Cys Val Ser Leu Val Val Met
                                   410
Ile Thr Met Leu Val Leu Gly Ile Tyr Leu Tyr Pro Leu Pro Lys Ser
                                425
Val Leu Gly Ala Leu Ile Ala Val Asn Leu Lys Asn Ser Leu Lys Gln
                           440
Leu Thr Asp Pro Tyr Tyr Leu Trp Arg Lys Ser Lys Leu Asp Cys Cys
                       455
                                           460
Ile Trp Val Val Ser Phe Leu Ser Ser Phe Phe Leu Ser Leu Pro Tyr
                   470
                                    475
Gly Val Ala Val Gly Val Ala Phe Ser Val Leu Val Val Val Phe Gln
               485
                                   490
Thr Gln Phe Arg Asn Gly Tyr Ala Leu Ala Gln Val Met Asp Thr Asp
           500
                               505
Ile Tyr Val Asn Pro Lys Thr Tyr Asn Arg Ala Gln Asp Ile Gln Gly
                           520
Ile Lys Ile Ile Thr Tyr Cys Ser Pro Leu Tyr Phe Ala Asn Ser Glu
                        535
Ile Phe Arg Gln Lys Val Ile Ala Lys Thr Val Ser Leu Gln Glu Leu
                   550
                                       555
Gln Gln Asp Phe Glu Asn Ala Pro Pro Thr Asp Pro Asn Asn Asn Gln
                                   570
Thr Pro Ala Asn Gly Thr Ser Val Ser Tyr Ile Thr Phe Ser Pro Asp
                               585
Ser Ser Ser Pro Ala Gln Ser Glu Pro Pro Ala Ser Ala Glu Ala Pro
                           600
Gly Glu Pro Ser Asp Met Leu Ala Ser Val Pro Pro Phe Val Thr Phe
                       615
His Thr Leu Ile Leu Asp Met Ser Gly Val Ser Phe Val Asp Leu Met
                   630
                                       635
Gly Ile Lys Ala Leu Ala Lys Leu Ser Ser Thr Tyr Gly Lys Ile Gly
               645
                                   650
Val Lys Val Phe Leu Val Asn Ile His Ala Gln Val Tyr Asn Asp Ile
                               665
Ser His Gly Gly Val Phe Glu Asp Gly Ser Leu Glu Cys Lys His Val
                           680
Phe Pro Ser Ile His Asp Ala Val Leu Phe Ala Gln Ala Asn Ala Arg
                       695
                                           700
Asp Val Thr Pro Gly His Asn Phe Gln Gly Ala Pro Gly Asp Ala Glu
                   710
                                       715
Leu Ser Leu Tyr Asp Ser Glu Glu Asp Ile Arg Ser Tyr Trp Asp Leu
               725
                                   730
Glu Gln Glu Met Phe Gly Ser Met Phe His Ala Glu Thr Leu Thr Ala
                               745
```

Leu

<210> 3

<211> 24526

<212> DNA

<213> Human

<220>

<221> misc_feature

```
<222> (1)...(24526)
<223> n = A, T, C or G
<400> 3
ctgggttcct atgtggggag gtcatgctcc ccactcattg agcccccca ggcaaaccac 60
ctggacagcc agacccatgc agactctgga gcaggtggag aggaagagtg agaccacccc 120
gcctcacggg cggtgaaggg ccggcagcct ctgaatagtc tctgctagga ggtagaaagc 180
acceteceat ettaateata gtaateateg ceactaceat ttactgggtg cetataaaag 240
gccagcctct tcatacacat gatctcactg aatcctcata gcatctgcct gcgactgtta 300
ttatccccat ttacagatga agaaactgaa tctttgaacc caggtcatct ggctctcaaa 360
cttgtgctgt tttccctaag ccaccggtc tctcatttct cccactgaaa tgtctcacat 420
gccattgccc ttactcattt ctgcccatgt ctcctccaaa acaccattta tcaattcgct 480
caacaagtat gtgttgagta cacactaagg gccaggcgag gggctgggca caggcgctgg 540
gggtaggttc atteteceae ettegettet getgggtate acetgtgggg tettgeeggg 600
catcccaccc tcacctgtag ttcaagtgga ccttgggatc ccaagaccaa atgaatggaa 660
tgcaccagcc cagccttcac caacttgagc acaatcttat tcataataga aactcacatt 720
tgcatcacac tttacatttt acacaacccc ttcttatcca ttaactcatt tgatcttcac 780
aacaaccctg tgagatatgt ctgttactcc cactttagtg atacagaatc tgaggtttga 840
aaagtaatgc tgaccattct gcctcattaa taaaagcagg attaacccag gctcctggac 900
ccttccacaa aaggcattaa gcaacctgct ccctctgac aacctcccct gtcacccagg 960
ctctcctctg ggaagttggg ggcatctcta gcccccaagt agttactcat tttcaacccc 1020
atctcaaatc ttttgccaaa ctggccacag ccaccccaca ctccccacct cccagataca 1080
aatcctcact ctaagccttc cccatctctt tcttctctgt ccttctttct ctgtggtcct 1140
ctgagcaact tctcccagct ctgggaggta gaggggaggt gggagaccca gtaattggaa 1200
gagggagggg gaaaggttcc tacagggaac tcctccgggc ctcaggggcc ctggcactca 1260
getetgeeca teteagetee tggaacgtea geeaggttge geaaaaagtg aggaggagag 1320
gagcggcagt acacaagggt gggggaaaga ttaggcacag gaagccgtgg gagagagagc 1380
cggcaggtgg accatectgg tttccccaca cacaccattg tccccctggg aaacctgttg 1440
gtgaagttet agatgtetta tecaagaagg gteetettga ggteatetea getateece 1500
tgcctctagg caagctgttt tctgtttctt ccaagctgac tggctgaatg gtaggagcct 1560
ttctgccagg gaaactaagg tctgggaagg gagtatggct tgtggggaca ccaggggtca 1620
ggggaggga gggtccacct gctgaatcaa gtggggcctc ctgccctcgt gattcccctt 1680
tgcctggtgc tcagtggggg tgatggtgac gccacaggtg tggagtgcca gccacgtgct 1740
gagcgccaag caaaacagcc agggtgagtc tatgcatcat cagtgcctgg gaaggaaggc 1800
cactgcgagc agggagtctg acggaaaaac ttgacagagg gaagggaggc accttgcttt 1860
atcggggcgg ggaaggccag aataaaactc tgctactgca aggaccagag agagaaggcc 1920
tgggctggca ctagggaggg atgttccctc accetecect cetetgette teccaaaget 1980
tgtaaatgcc ccagatatga gccagcccag gccccgctac gtggtagaca gagccgcata 2040
ctcccttacc ctcttcgacg atgagtttga gaagaaggac cggacatacc cagtgggaga 2100
gaaacttcgc aatgccttca ggtaactggt ccagagccca gacttctgcc tcctctgctc 2160
cctaccaaaa tcctttctgc accaggacac ggcttctgca ctggtatccc taagatgggg 2220
ttaagggaag ccctggggaa gtgaggttct gaatgatgaa tttaagatcc tacaacctca 2280
tctgtactga gacccccagg gaggatgggg agcaggagca agaaccatcc agaagggtta 2340
tatggcattc ccaaacccct gcatggcatc tcccatattc tcaattcacc cgggtctctc 2400
tgggtttgtt aaggcatggt agatgagcat ctacgttatg gaggggtggg gagcatcaga 2460
gcccttactc catgccctgt tccctcctta caaaaaatac ctgaagttac catcacccca 2520
ggttctttgt cctttccctc ccggatgttc cttcctccac ttggtccaga gaatgccaaa 2580
aggaggccct aaatttctga actttcctga ggggacctac cagggtgtag tcctaccagc 2640
gcccagggtc tttccactct catctccctg gaaatgcgat ggtgggtatg aaaccttgtc 2700
cctaagtagg cgctacacaa ggtgatccat acccacaccc caggaggctg gggctgcggg 2760
tgtcaccctc cccattccca gactcctggc agacctcctc tggcccagct ataggccaac 2820
tcactctccc tcactccctt ggggaaacgg ctgattcagt tacctggatt gaggtcactg 2880
gcaatggctg aagtggagac gcaggtggaa ctggttcagg ccgggggaat cacccacttg 2940
agtttgtact aaaagcccca gcccagccct gtttctcttg ggaggctcca tttctgccca 3000
gttacagtct gtcctcacag ctgtgctcct cagacaggtg gtctctgcca gtctttgtgc 3060
ccaagacttt agggcacaaa gtctgaggat gagaagatct gctattgtcc taaaagatta 3120
```

ggataatgaa agctgtaaag ggatatagca aactaacaat tcctatgata ctggcatgag 3180 agccttgaac agtgcctggc atagagaagg tgcaccaata aatatttgtt tcatgaatga 3240 atgaatgaat gaatgtctag aaagctaatc cctctcagcc tctgtttcca gttcttcttt 3300 caagetteag attgetttge ecaacataca geagaettge aagtaaggtt gggeatggae 3360 tagccctcaa atgagttgtt tttctttccc tagccagctc tctattcata agtccggctt 3420 tetetgecae aaacagaeet gatggageee etgeaggget ggttetetet teaageaagg 3480 ctttagagtt gcattaagca atttatcccc cgtccacctc cccttccagc atcccaggga 3540 tggcagaggc acccatgagc cccagaaggg acagggggta agatattgat gatgatgctt 3600 tttcttggag tgttagttgg aagagaaat ctgcccagac tttccaaggt acaaagcatt 3660 gtctttgttg gtttcagtct tgggtgacat ccaggggacc gagtgtcagg gaaactattg 3720 ttgagcaaga gcaaagagca ggaattggtg ctgggcagga aaggaagcct catcagagca 3780 ggccagtgag tcaccaaatg ggccctaagt atttgagttc cctcaactgg gagaaggaaa 3840 gcaaatgccc ctcacccact tccagtcatc aatccaccgg ctgtcaccct tgagtttgta 3900 agcccttgtt cctaccgctc ctgagtttct atgaaaggac cttgaggtgt tcaacaaaca 3960 gggaagggat caacteteee caecetgegt tgaccaatga attetteeet cetetgetge 4020 ccagtgaatt aacaggagaa agaactccgg tattggagtt accacacata aaggataqtq 4080 agtcagcaga gtgcaccctg caggaacaat agagccttcc ttttcaagga agttctaaga 4140 aaaatggcag caggcaggcc ccactcgggt gtattcactc attcatttat tcaacaaata 4200 tttactaagt gcccctgtgc aaggctcgag gtgtacaaag atgaacagga gagctagact 4260 tcttgccatg cgtggtgggg tttgctgcct agtgggagag acagacaaaa agcaaggaat 4320 gcacacacag gatgcacaca cagcggcagg aaccaaggtg cagttaccca ggcctgggat 4380 cagacagaca ggactcagag gagactttcc cagagaaaag ccatctgagc caagggatgg 4440 atctgatacc tccgaaggct gagccaccat aacactcata cctttaagcc aagtcttata 4500 aactccccag gtaagcagct ggcagtcaga agacctccag ctaatgccca ggacaagttg 4560 atgagetete aagaaaaagt teetgeettt tetteteaat ateeetggea cacagtteag 4620 tgaattttga atgaaccaat gaatgaaatg agcaggatat gataatccct ctccaacacq 4680 gaatgtccaa gccatgcaga gccgactgga aattttcccc gttcccttcc agatgttcct 4740 cagccaagat caaagctgtg gtgtttgggc tgctgcctgt gctctcctgg ctccccaagt 4800 acaagattaa agactacatc attcctgacc tgctcggtgg actcagcggg ggatccatcc 4860 aggtcccaca aggtgaaggg gctccttcag ccaggcctgg attgccactc ccctcaccat 4920 tecteteete atececaete catecetetg tgatececat aagetagtea tgetgetgag 4980 cttcagtctc gttgtcctct gcaggcatgg catttgctct gctggccaac cttcctgcag 5040 tcaatggcct ctactcctcc ttcttccccc tcctgaccta cttcttcctg gggggtgttc 5100 accagatggt gccaggtaag gcctctcccc tctgggcagg caggatgacc cagaccacaa 5160 ggatgggagg tgtggcaaag gggcctcggg agattttcca tctgcattct cctggagttg 5220 ttcctggtca gtcctagggg aatggtcact gtgaatgtca tttccagqtc ctcqqtqacc 5280 ttggagaaac cactgagcct ctttgagttc agttagcatt acctgttcca tcttcctcct 5340 aggaatgaga ggaagactta gcagaacaag atataccata tgctataaca tgcttaaaca 5400 gatgtgagaa atcaccatct aactccctgg ttggtcccag ccggccacta cagggacatt 5460 tggacttete tggtgetaag tgagatggag gaaageetgg teacaaggge tggtttetgg 5520 ttcaggctct gcttatattt cttatttctg agttcatttt ctcacgtgtc ctgtatgaca 5580 atattgacca ttggggtaaa agcaccttga aaagcataga tcatggttag agtgagtggt 5640 tgttattatt gtgttggaga agagccttgg aggtgcaggg atccatcccc ctggggtcgg 5700 gaagcattcc tgggcccctt tctggtttcc atcggtgtgg ttcaaacctc tgatttttgc 5760 tggctgggtg gggcaccaca ggtacctttg ccgttatcag catcctggtg ggtaacatct 5820 gtctgcagct ggccccagag tcgaaattcc aggtcttcaa caatgccacc aatgagagct 5880 atgtggacac agcagccatg gaggctgaga ggctgcacgt gtcagctacg ctagcctgcc 5940 teactgeeat catecaggtg agggggeage ceceaaceet getagaaggg cateagaeea 6000 ccctgcccct ccctcaaagc cttagctttg atgctaaatc tgatttaggg ggctgggtgt 6060 ggaggctcat gcctgtaatc ccagcacttt gggaggctga ggagggtgga tcacttgagg 6120 tcaggagttt gagaccacct tgaccaacgt gatgaaaccc catctctacc aaaaatacaa 6180 aaataatcca ggcttggtag tatgcgcctg tagtcccacc tactcaggag gctgaggcag 6240 gagaatcact tgaatccggg aggcagaggt tgcagtgagc tgagatcgcg ccactgcact 6300 cccaagttag ggctcacctc ctcctcctc cccatcccag ggctaaagtg aaccttgaaa 6420 attaacagta teteeteate tgeatgtage aggaceatae aaaaaaacaa cagetgtace 6480 tggttaaact gtcctgagct ttaaacctgt aaaagactca cagcctctct ccattatccc 6540

gtggagaaac ccaactetet gecageatag tettgeagae tgetaatttt etetaacate 6600 cctcactccg ctccagcctc ctctgctcca agccacagca gcagttgcac aacataaatt 6660 gagettetge aaatggttge aaaggattet getaggtttt atgaagggaa geacaacatg 6720 acagaatgca agagcaaaac acagtcccag agagcgcctt ttcattcact cattcattcg 6780 gttttgtgcc aagaactagg ctaaaccctg ggatacaaag ataagtaaga aagaggtcca 6840 attcacaagt tgctcacagc ccagcagagg aaggagccat gtcaacagat aaatttgtat 6900 tcacggagga cctcaaagag gaggtgacac tccacctctc ttaaaggatg agaacttaac 7020 caggaacaag gtatacagag gatggtccag gcagaaggga acagtgccta aaaacactga 7080 ggcctgagag agtgtgatct gcgcaggcaa agtaaggggc ttggtgtggc tggagggtag 7140 agggcccaga agaggatgga aaagtaggca ggagccagac aatgagatct ggggtctgtt 7200 ctctgacagc gactttgggt ctgattggca gtttataagg atcgtttggg ctacacaatg 7260 atgagtggga ggtggattag aatcaaggca ggggacctgt tgggagactc tgcagaggcc 7320 caggcaggaa taatgcaggc gaagaccagg tagagaaaga gatggggctg gacttgaaaa 7380 gaatgtttta ccaggagctt ggtgatagac tggatgtggg aggtaaggga ggatgactct 7440 caagtttttg gttgggcaac caggttaatg atggtgtcat ttactgagag agaaaacact 7500 gggggaggac tagacttatt ttacagataa gccaaagcca gagaggtgat gtgacagaaa 7560 ggcccatgct ctaaaggagc tgaaggtctg atggcagcca tgtagagcac agtgaagggc 7620 aggtgaaggt cacagatggt ccaattccct caagctactg ctacgctagg actgcacgga 7680 gctccagacc tgcgtgtgtg tggggcgggt cgttggaact gctgaaccac attggtcttc 7740 cgccaccaac caccettttc ctcctctcag atgggtctgg gcttcatgca gtttggcttt 7800 gtggccatct acctctccga gtccttcatc cggggcttca tgacggccgc cggcctgcag 7860 atcctgattt cggtgctcaa gtacatcttc ggactgacca tcccctccta cacaggccca 7920 gggtccatcg tctttgtgag tctggggatg cacccctgcc attggagcaa ggctccagca 7980 gacacatgag gaggatgtac tgttttaaga tgtcgtgagc tcctcattgc aagggctggc 8040 ttagctgttg ttcagagagg attctgaggg ggtttctgtc ttgggagggt caaagtcatg 8100 actcacagag gttcttggta gttaatacct gcagaaaaga gctgtacatt ctccgccagt 8160 tececattet agtgeeteaa eccetecetg eetggaaagt eetgeettat gtetaatete 8220 catccctcct ccttcagccc aaactcttct aaagaaaaag aaagcattcc ttttctagca 8280 caagttcccc atgtgccttt tgggaaaggg cggtgggcga cgggacaggg ttcctgatca 8340 gggttttaat tetgtettgg tgtgeeteea ttagetttga tggeateeet teeetgggte 8400 agacacccaa aggtggggta ttatgggaag aaggggtggg agcctgtgag catgatgctc 8460 tttcccccag accttcattg acatttgcaa aaacctcccc cacaccaaca tcgcctcgct 8520 catcttcgct ctcatcagcg gtgccttcct ggtgctggtg aaggagctca atgctcgcta 8580 catgcacaag attcgcttcc ccatccctac agagatgatt gtggtaagga ccttgttcag 8640 agctgggatg ttggggggcc aggctgtgag acgaggaagc ccctaccttt cctcacccca 8700 tcccctcaac tggcagccag tgggacagga agtcagttgt gaatccatcc catccccgt 8760 atgtggcgtt tcctctcttt ctactgctct aataattccc cctaaggagg caggggagtg 8820 ggattcaggg tccccagaga aaagggagac ttgagagaga cgcctgccct ggccccacct 8880 tagggccaat ccccattctc cactctgggg tttgcaggtg gtggtggcaa cagctatctc 8940 cgggggctgt aagatgccca aaaagtatca catgcagatc gtgggagaaa tccaacgcgg 9000 gtgagtccag gtggcccaga agcctggccc acccgcacct catgccccac taaggcctga 9060 gctcggagag ggagacaaga tgaactctat gaaagtgcag tcgaaactgt atgacactga 9120 ccatgtatga attattacta ttaccgtttc ctgagaaggg ccgcacaacc agccaatgta 9180 ggctatttta tgagaaatga gtcttaactg ccacactccc cttataaatc tcattcaact 9240 gatgctgtta aacaaagcct ctctgaacag ccgcttgctg gctctttgcc ttgctctaat 9300 gcattggttc tttgtccatg tagaaaggga actattaggt tcaaccagat tcatgaagca 9360 tccactctgt gccaggcacc atgctgggcc ctgggaggag aggggtgacg cttgtcctgc 9420 agggttggaa caggcaaggg agggaagacc acatagcacc aaaggtctag gggtctgtgg 9480 actcgtgagc atacagggtt cagaatctgg gagttaacaa acgaggccct accacatact 9540 ggcccgggga ccttgggcaa gttaggttct ctcagcctca gtttcctcct ttgtaaaaca 9600 ggagtgatgg tecetaceet atggggtggt getgaggatt cagaetggat qqqataaett 9660 aggcaaagat cccggcacac catgggggcc tggctggtcc ctgtqqqctq qtqaaqqact 9720 tggctgccct ccccactcac acccttgggt tctgcctcct tcctggctcc tcggcaggtt 9780 ccccaccccg gtgtcgcctg tggtctcaca gtggaaggac atgataggca cagccttctc 9840 cctagccatc gtgagctacg tcatcaacct ggctatgggc cggaccctgg ccaacaagca 9900 cggctacgac gtggattcga accaggtagc tctggccacc cccggcagga ctgggcagga 9960

caggtcaact caggcctggc atgacatatc ttgggtgggg agatcattgg gctgaggtga 10020 ggcaggctgc ctcgagtgtg ggggataggg ggtcctctga ccctaagagg ctgacctcct 10080 cttgactggg aatgtgtgac tttatagcca ctgggtcact ctcaggtctt aggcccacag 10140 tecagettge atgeetgact geacttggte eccgtgeece ceageceeae actggettet 10200 aatcetgtee cetecetgea ggagatgate getetegget geageaactt etttggetee 10260 ttctttaaaa ttcatgtcat ttgctgtgcg ctttctgtca ctctggctgt ggatggagct 10320 ggaggaaaat cccaggtgag ccttgttcta ggggagttgg ggggaggtgg taagagaaca 10380 gttgccccaa aaaagcctgg gcactgcaag ccaggccagc tettetecga cccettette 10440 ccgtacttag tctccactcc accaaagcca tggattggaa ataaatcaag agcaaaaatt 10500 tcacaccttc cctctatccc caactetttc tcggaatagg tggccagcct gtgtgtgtct 10560 ctggtggtga tgatcaccat gctggtcctg gggatctatc tgtatcctct ccctaaggta 10620 agageceage categageag aagteaaega aagaeteeaa taagaaeaat eeetgagagt 10680 tgtgtggcac tttacggacc acaaagtgcc actgttgtca tacttagtct caaccacaaa 10740 ctgtgaggta gacaatgcag gttttatcct ccccatttta caggtgaagg aaactgagtc 10800 tgagagtcta agtaaccttg tccatagtga ggcagcttac agcqcaqqqc tqqtcccaaa 10860 ctccagcett ctggcctcag agtctaatcc ctaggcaaca tttgcaccta cccacgagta 10920 ccaggctctt atatagccca gctaggaggg ctctaggcat gcgtcattta gagatgaggg 10980 aagagagata gggaaaggat ggggccagga aggaccccat ggctctaacg ccaqcacttt 11040 ccaaacctaa ggtcgaatgc agagatttgg gggatcagcc aggggaggtg ttccagaact 11100 ccgtctctgt cctgccaggc cttggggtcg ggtatgcgca ggagggcaaa aagaagggga 11160 gaccotgggg teetggagea atgttetget tetetagtet gtgetaggag ceetgatege 11220 tgtcaatctc aagaactccc tcaagcaact caccgacccc tactacctgt ggaggaagag 11280 caagctggac tgtgtaagta tcgggcagcc tctgggtact ggccatgccc ctgccctctc 11340 ctccaaccc acagccctgt cagccctgtc ctaacaatga accctctagt ctgctgcttc 11400 ctaattagca tgagatgagt ggttaaaagt ccgagtttcg aagtgaaaca tcctatgttc 11460 aaaccctaac tcagccatct gctggctcca tggccaatag caagcccctt aacctttccc 11520 agtettggtg tettaactgg geaaatggtt attttatget etetgeetee cagggtttte 11580 tatgaagaag aagcaaggta atacaagtaa acatgttgtc tacatcgtat tttatactca 11640 ataaagetta getatgaeta etttatgaea taeagettta aaaaacaaaa ggaaatagtt 11700 tgtattttaa aaaaaaacct agaacataaa gccagaggac caaaatcttg agcaagttac 11760 tagacttccc tggggttcta tttcctcatc tgtaaatggg ggtgagactc atgcagtcat 11820 ggttgcgtca aacgctggtt ccgaggatta aatgagatcc cagtgggaaa acaccgcatg 11880 agogoaaaca ttotgoaaac atgacttatt gtootgatta gtoacacact ccaccgcatc 11940 atcogctggg catagtaatg aaggccagtg tgttttgacg acactgcctt ctctccattt 12000 aagccccacc ataacctatg ggagaggatt tactaaactt tcttaacggt gatgaaacca 12060 aggeteagaa tggttaagta aattgteaaa ggeeacagag gtagggagtg gtagagtetg 12120 gattaaaact ccaagtcctg gactccagac ctctaggctg tactgtctca tagggaaggc 12180 agtctcaccc acctagggca gagaagaaaa tccttaaagc cagagaagtg agtggctcat 12240 ctgtggtcac ccagagagac agtgatgagg acagggagaa aaattatacc tcagttccca 12300 gcccaaggat ctgctttgac cataacccaa caagcccccq ctatqqtqqt atttccttaq 12360 gttcatatgg cggcttttgt ttccatttga tcttcacagc aattctctac aggaatctgg 12420 gcagatttat ttcctttaga ggaatttcca ggtcttaaaa tctatagggg gcaactatca 12480 aaacttcacc caatgttgcc ccctacccac acacaaaacc aggcccccag ccgatcagaa 12540 agcactgetg agetectgte agggeecaeg cagetegetg tgagacagag agagggaact 12600 cacatttatt gatcacctac tgagcatcca tcactaggct aggaccgtca cattccttaa 12660 cttttgaatc ctttcatgag gtaggcatta ttattctcct tttgtttcac atagccatta 12720 aagaacaaaa tttggggctg ggtgtgctga ctcacacctg tgatctagca ctttaggggg 12780 ctgaggcagg aggatcgctt gaagtcagga tttcaaggtc agcttgggca gcttagcgag 12840 agccgtctct agaaaaatat aaaagttagc tgggtgtggt ggcacgtgcc tatagtccta 12900 actattcagg aaggttaggc gggagcacaa cttgggttcc agggtttgag gctccagtga 12960 gctgatcttg ccactgcact acagcctgag caacagagca agaccctgtg actccaaaaa 13020 caaacaaaca aacacatttt gaacccaaac agatctgacc caagatgcat gctcttatag 13080 atgccacctc cctgtgtgct ggggcttcta ctaaaaacac agacaagatc aggcaaccac 13140 agtcaatcta agggaaagag gaaagtgtaa ccaaagcaca aatacataaa atattgcaaa 13200 aatgctattt aaagaaaaaa aagagaagag aggctctgag gttgtactaa cagagaatgg 13260 ccttggctaa tccaggaaga cttcctgaaa gaggttgttt tttccccagg tctgcttttg 13320 acatetetet ttteacagtg catetgggta gtgagettee teteeteett etteeteage 13380

ctgccctatg gtgtggcagt gggtgtcgcc ttctccgtcc tggtcgtggt cttccagact 13440 cagttgtaag tgatagcttc cgccctccta ggcccacagt cggttccctg ggccagcccg 13500 caaagggctt ccatgccacg gcctggctta gtccactgta ccttccacct ctgggcctgg 13560 cactggaggt gctgccaggc ccaaagagag cccaacccag ccaggactgt gggcacagtc 13620 tgggctgttt gacttcccat atcttgaaaa ccccagagaa agccagcata ctcttgctgg 13680 ggatggctgg ggagagggca gtggcagaga aaggagggca agggcaggtg gtgagattca 13740 acatecttee aaagacattg ecagaaceee aaaceaaatg ggaceecace ecaggagage 13800 gccagggtgg aagacagaag ctgtgttcta cacactggga gtattacaga gaaggggtct 13860 tggccaaggc agggagtacg ctgaatgttg ggggaatcct atcttctctt cttgagaact 13920 cagaacaagg aaatgatgac ttcagggcga ctcccaccac ttctcccacc acttctctcc 13980 cctgccctgt ggtctgggag ctatgtcaag gacctgcctg tcatcctcat agttatagga 14040 ggccacaggc caccagacat gtgtctccag tgcaaaaaga cagacacagc aagtctgggg 14100 gtgaggacag gaccccatcc taccttggct ctgccccgc cccagcaggg gcacccttcc 14160 aggeceatgt gecattagea ttetettatg tttttetett cetgetteat ceaqteqaaa 14220 tggctatgca ctggcccagg tcatggacac tgacatttat gtgaatccca agacctataa 14280 tagggtaggt aattcaagct tatgacctcc ttcttttgct ctgcaccacc ccaagaagag 14340 gttgcttttt aaagccaata aagacatttc tgcaacttga gctcagtctc cctgtcacag 14400 gcccaggata tccaggggat taaaatcatc acgtactgct cccctctcta ctttgccaac 14460 tcagagatct tcaggcaaaa ggtcatcgcc aaggtaaggc tcagtccctg gcgaccagag 14520 gctctggaca gagagtggcc ggaaaatgga agcagaaggg cggtgggagc tgagaatagg 14580 ccactcccat agagggtgga ggtcaagatt gctgttggct ctctccctgc agacaggcat 14640 ggacccccag aaagtattac tagccaagca aaaatacctc aagaagcagg agaagcggag 14700 aatgaggccc acacaacaga ggaggtctct attcatgaaa accaaggtga atgaaggcca 14760 gaagcagccc cgtgccctgc tctcctgccc attctgatac tgcccctgt tactcatggt 14820 accetggggg cecegettee caccetgaca ggeaaagaca gaaagtetet gggaacaetg 14880 cctggtggcc gctgggcatt tttcttcttt tttttctttt tctttttaga gatggaattt 14940 tgctcttgtc acccaggctt gagtgcaatg gcgttatctt ggctcactgc aacctccacc 15000 tctggggttc aagcgattct cctgccttag cctcccaagt cgctgagatt acaggtgcca 15060 ccacacccag ctaatttttg tatttttagt agatattggg tttcaccatg ttggccaggc 15120 tggtgtcaaa ctcctgacct caggtgatcc acctacctta gccttccaaa gtgctgggat 15180 tacaageetg agecactgeg eccageetgg geatttttet tettggatga ggtgetacea 15240 teteccaggg aagecaetga acceecaagg ceetteteca ttttetgget aagataggae 15300 atggcccatg gacttttgaa caacccagag ggggaacagc agtgaatttc ctggggaacc 15360 caggcagccc agggctagca aggctggggt ggccatggca gtaatccttg taatcccagc 15420 actttaggag gccgagatgg gagaatcact ctcatgagtt caggagttcg agaccagcct 15480 gcccaacgtg gcgaaacgct gtctctacta aaaatacaca aaaattagcc aggcgtggtg 15540 gtgggcacct gtaatcccag ctactcagga ggctgaggca cgagaatcac ttgaacccgg 15600 gaggcagagg ttgcagtgag ccgagatagt gccactgcac tccagcctag gcaacagagg 15660 gagactetgt etcaagaaat aaaggagete agtgteeeeg gaggggettt etceeagaga 15720 gagtgggctt gaggcttcag tgcctctctt ggctgggtcc tctgactttg tctgggttgt 15780 aggagaccaa gtttgcaggc cctgcctaag aaagggcttt gggagaggcc tctctggtgg 15840 agettteagg gtetgtgtte accateaceg aggegagtta tteceetaca cetacaceet 15900 ccatgcccct gcttcagtca cagcaaggtc tggctcagtc tggtggtccc tgactctgcc 15960 cactgtcccc accettccag actgtctccc tgcaggagct gcagcaggac tttgagaatg 16020 cgcccccac cgaccccaac aacaaccaga ccccggctaa cggcaccagc gtgtcctata 16080 tcaccttcag ccctgacage tectcacetg eccagagtga gecaccagee teegetgagg 16140 ecceggega geccagtgae atgetggeea gegteecace ettegteace ttecacacee 16200 tcatcctgga catgagtgga gtcagcttcg tggacttgat gggcatcaag gccctggcca 16260 aggtgaggcc ctcggggaca gcaagcacca cccactccac cccctccgct ctgctctcca 16320 cattcccttt cctgggagcc ctcatttcag gaagctgagg gaggaagctc actggggaga 16380 ctaacagete ctaggaatee etecttteee cagaegeeae caggttgaga catteteeae 16440 agagcaggcc cagacggccc atgacaatga gtggcgggac aagtctacca gagtttcaqq 16500 cccctgtgct cccaacaccc ccagcagtgg ccatcccaag tccctctcag ccatcaggaa 16560 cccacccagg ttctctgagg agggtccagt ttggctcctg gttcatgatc tgctgccctt 16620 gtccctcatt caccagccac cctaggacag gagaagaaat aataccagtg ccccacacca 16680 tcaggccaaa cagagagccc acgggacacc ttgaatgaat gtatccatct gataactttc 16740 cagcagecae egecaatgge gggagteage aaaceteaga getggeteag atagaggeaa 16800

gccaggggaa caatgggcac agagagtgtt cggactgcct tcaccatcaa ccaggcgcag 16860 ggcaggcccc atacccagcc ttgggcctca gccggcttcc ttagccagga tctggagtcc 16920 aggecageet tggetgaage tetagaetee etgageetee atecteeeet geagettetg 16980 tetgaageea caaagaagte tgagaateta agetaetgaa agaaaagate ageegggegt 17040 ggtggctcac teetgtaate ecageaettt gggaggeeaa ggeaggtgga teacaaggte 17100 aggagttcaa gaccagcctg gccaacatgg tgaaaccccg cctctactaa aaatacaaaa 17160 attagccagg tgtggtgacg ggcccctgta gtcccagcta ctcggtaggc tgaggcagag 17220 aattgettga acccaggagg eggaggttge agtgageeaa gategegeea etgeaeteea 17280 gcctgggcaa cagagtgaaa ctccatctca aaagaaaaaa aaagaaaata tctagcccca 17340 caagaagggg ccatggtgac tttaagtgcc cgccacgttg gcaaaagtcc atttccgctc 17400 cacttcccag agaaaccgtc agccaacact ccagggagaa gtggtgtgct ttgctgctat 17460 ttttgtcttt ggctgctggg ctctcagggt tgcttatttg tttggcttcc cctctgaagt 17520 acgttttgtg aatcactttt gagaccact cagaacattc ctttcctttt gcctccctac 17580 cccaacaaca cttctagctg agctccacct atgggaagat cggcgtgaag gtcttcttgg 17640 tgaacatcca tggtaagaga aagaggacat ttagggactg aaagactggc aaggagtgtg 17700 gggtaggaac aggttggtgg ggtctgaata gtgaggaggt tggaaacgag agcacccagc 17760 tatececeae aagetgetge etgeteataa aagetteagg tacaagteea aagagaetgg 17820 tcagattgca taaacatcct aggggcctta gtgacagagt gggggtgagg aggtcatgga 17880 gttacagaag gacagctagg attctaatct accccataac taatttgcca cgtatccttg 17940 gccgagtcac tttatctctc aagggatcta tttctaccta tgtaaaacga gagggttgac 18000 tagatggatt tggggatcct ctcccaatca gaaactctgt gaatcgatat aggcatagag 18060 cacacggtac cctaattccc cagggaacat ataaatatgc agttttgtag gcatacagcc 18120 tccaaagggt gcatatacac agcctcaagg acgtggccac agggcagcag acatttacat 18180 gactagcatg tacgcaaagt gcagagatgt gggagcaagt gcacacagac acacaggaga 18240 atgtgaaggg gcacatacac acacacccag ctccctgcac tgggtcagac cccctccagc 18300 agggctgcag ttcccaagct ccgcatggcc acgttcgggg agagaatctg cagtggcaat 18360 gacctgctat gatatgttct ggagttagaa gcagtggatt ctccccaacc tcactggaca 18420 cccccttagg aaaccatctc taggattaag agtaatccac acaaacttcc aatgccacac 18480 attggaagtt gctggaaagg tctgggaaaa caagaggaag gatgggtcct tgggggatag 18540 aactggcagc ggcctcttca aggatggctt aggcttttcc actcgaatca ccacaaagta 18600 ctgactccct aaatcaaact gcttccttct gctctgggtt gaaacttcag catcctcaag 18660 ttcatgttgc cctctgccgt ccagaactga tattgcactg ccaatgccat ggccctcaga 18720 tacagcaaga gctgggacct caggcctctc ccatccctgc tctggtctca ctatcttccc 18780 cacccccagc tccaatccac aatggctgtt atctttctga aggtgatctt ttctccttct 18840 agcccaggtg tacaatgaca ttagccatgg aggcgtcttt gaggatggga gtctagaatg 18900 caagcacgtc tttcccagca tacatgacgc agtcctcttt gcccaggcaa atgctagaga 18960 cgtgacccca ggacacaact tccaaggggt aaggttcttg cacctgggga atcctaggct 19020 ccaaggcact gaaatagcag gaccaagagg cattattaga aagaacacag gagaaggttt 19080 aagttccaat atcaagtctg ccatttcagt tttctgaatc tgtttcctta tctatagaat 19140 gagcaccatc aactaacatt acctacctct ctgcattttt cttttatttt gttttagggt 19200 taaatgataa ttacatcttt tgtgtcactt gaaagcactt tgtgtattgt aaaaattctt 19260 tatcaatata agttttctgg ttgcacaaac acccaaagca tagtagagca ggcccactct 19320 gctggcatcg ttccctgcct cctcctcatc tctttctaaa gggggctttc gggaagggag 19380 gggaggggag taagcctacc cattttaact taccggagct tagagatttc aggctggtga 19440 gggataaaga gattgggtct gagttttgtc tcagcttttt gacatttaat ttactagctc 19500 agtaagtcat acaaatggga tacaaataac accatctaaa actccagaag actggggagt 19560 cagaaaaatc ctacctcctt ggggtccctg cccagatccc cagtcatctc tagccctcag 19620 ggtcccctcc cagctcagct cctgcccttg gcctcccaag actcttgttg tgccccagcc 19680 ctgggtaaaa acctcccctg ccctctgtgg gtcataagaa aggcttttct ggccctagag 19740 caatgatttg ctctttgcct taagagactg atgaaggtga aaccatctgt tctaagtgct 19800 gaaagactgc ccaggaacac acagggcgct ggctcctgcc ctccatgcct agagggaaac 19860 cctggggaaa caacgggctt tcctgcttcg tgaaatttgt ccgcagagca aagagggaga 19920 ttctggagga agctgcatta gttgttagtg ccctaatcat gttcagctac tctagttggt 19980 atgtatactt gattagtcat agcacttata aataatttat attttatata atatatactt 20040 acatattata gaccattcac agatacaaat cacacacata aacacacac ttttcaacag 20100 cattgtgagg gacaaagcag gcaaagtgag gctggttatc agactttaac agattagaaa 20160 atatattccc aggaggacag gaattcccca aggtcaggca gctagccaat agtttttcta 20220 agctgagtaa aaccttecet geetetaaeg geecacaaag gagggaagae egegatacae 20280 acctgtctgg tataaggggg aagaccacag ccgtgctgtt tttgtgaggc aggtaaggga 20340 aggggcaaga ggataagtca tgtgtcagga agcagcgtcc aaccagagcc ggccacctgt 20400 cccttttcct gccaccatgc accaactttg ctgttcagtc actgaagetc attctgcact 20460 ggcttcctcc cttccaggct ccaggggatg ctgagctctc cttgtacgac tcagaggagg 20520 acattegeag etaetgggae ttagageagg tgagetgagg gaaggggetg tgagggtggg 20580 agcagggcga agaggggaag gatggggtcg ctgtcaaata caaggcgttc actcagctgt 20640 ctcacctcca gcccagagca gtcacattca aggccacaaa gatttgtggt catctttgtt 20700 ttttttcttt tccttttctt tttttttt ttttaatttg agacaaagtc tcactctatc 20760 acccagactg gaatgcagtg gcatgatete ageteactge aacetetgee teeeggqtte 20820 cagaggttet cetgeeteag cetecegagt agetgggaet teaggeetge geceagetaa 20880 tttttgtatt tttagtagag acagetttte accatgttgg ctgggctggt ctcgaacttc 20940 cgatctcaag caatctgcct gcctcggtct cctaagtgcc tggattacag gcataagcca 21000 cgatgcctgg cctttgtttt cattcttctc actccctgaa aggcatcgtg gggagagggt 21060 gagtcactgg accaagtcct agagaaccag tatctattct tattctccaa cacatcaccc 21120 acgtgaccct gagcaagcca catacaccct gggccctagt ttttatcatc tgtgaaatta 21180 ggggaaacat aggtaatacc tgtcccatcc accacacag attggcaggg cagtcacttg 21240 ttctttcatt aattcagcag gtatttatgg cgtacctact gtttgcctga cacagttcag 21300 gatgggcaca tagcagtgag caaaacaaag gcctctgcct tttagaaact tacgttatgg 21360 nnnnnngtct acaaatgaat tattattgca tgtggacaag ccttaagaac taaaaaatat 21480 gtggctgggt gcaatggttc acacctgtaa tcccagcact ttgggaggct gaggtgggcg 21540 gaccacctga ggtcaggagt ttgagaccag cctggccaac atggcgaaac cccgtctcta 21600 ctaaaagcac aaaaattagc caggcgtagt ggtgcatgcc tgtagtccca gctactcgga 21660 agtctgaggc atgagaatca cttgaacctg ggaggcagat gttgcagtga gccgagatcg 21720 tgccactgca ctccagcttg ggtgacagag ctagactgtc tcaaaaaaacaa acaaacaaaa 21780 caaaacctaa aagatatgtg gatatgaggg atcaccatcc ccatagggcc cctqgattaa 21840 caccaccca ccaatgccct gaattaaaag aaaccagatg actaggtttg gagaaatctg 21900 gctttgggtc tatgagaagt agtgtctctc tttgtgcctc ttcccattct ttttgacatt 21960 gagetecatg gtgetetgaa teegtetete acagtgetga tggeaggtgg gacagattag 22020 aaaatagagc tggagccaca gagatttggc agactgattt cggtgccctc ttggaatctc 22080 cagcacattc caaaaagcct ggataggacc aaaatagctt atcaacgtga gaaaggactt 22140 cagagettgt ctactgccaa ccctcatttt acccaatgag gaaagtgaag ctattagggg 22200 gcgagggaca cgtggaaggt cacacagcac acaggaggtg attcacatgt agatttcagc 22260 acctgetect gecaegetgg actggtteac etcetagget gaccetgeet etcecetgtt 22320 cacacacact ctcgcacaca cacacacaca cacacacaca cacaggtgct ttgttctggc 22380 caggggttcc tagggtcacc tcttggttgc agccactgtg accccaactg gtctaacctc 22440 totottocco toccaettoo ttootgtggt tootgcagga gatgttcggg agcatgtttc 22500 acgcagagac cctgaccgcc ctgtgagggc tcagccagtc ctcatgctgc ctacagagtg 22560 cctggcactt gggacttcca taaaggatga gcctggggtc acagggggtg tcgggcggag 22620 teceteceeg catetecaga gagageetet cageageagg ggggtgetae cettacagga 22740 gtgagagtet ggtgageeca etetteacce gteaggeect ggeegeaatg gacaageete 22800 etgeteacte cacceacce acctetgece tgteettgge agetgaagga caccttgact 22860 tccagctttt acgagtgagc caaaaacaga aggacaagta caactgtgct ggcctgctgt 22920 acaagcttca aaaagtgtcc cagagcccac acggctcggt gtcagatggt gtcaggctgt 22980 cacggacata gggataaact tggttaggac tctggcttgc cttccccagc tgcctcaact 23040 ctgtctctgg cagctctgca cccagggacc atgtgctctc cacacccagg agtctaggcc 23100 ttggtaacta tgcgcccccc gtccatcatc cccaaggetg cccaaaccac cactgctgtc 23160 agcaagcaca tcagactcta gcctggacag tggccaggac cgtcgagacc accagagcta 23220 cctccccggg gacagcccac taaggttctg cctcagcctc ctgaaacatc actgccctca 23280 gaggetgete cetteccetg gaggetgget agaaacceca aagaggggga tgggtagetg 23340 gcagaatcat ctggcatcct agtaatagat accagttatt ctgcacaaaa cttttgggaa 23400 ttcctctttg cacccagaga ctcagagggg aagagggtgc tagtaccaac acagggaaaa 23460 cggatgggac ctgggcccag acagtccccc ttgaccccag ggcccatcag ggaaatgcct 23520 ccctttggta aatctgcctt atccttcttt acctggcaaa gagccaatca tgttaactct 23580 teettateag eetgtggeee agagacacaa tggggteett etgtaggeaa aggtggaagt 23640

```
cctccaggga tccgctacat cccctaactg catgcagatg tggaaagggg ctgatccaga 23700
ttgggtcttc ctgcacagga agactcttta acacccttag gacctcaggc catcttctcc 23760
tatgaagatg aaaatagggg ttaagttttc catatgtaca aggaggtatt gagaggaacc 23820
ctactgttga cttgaaaata aataggttcc atgtgtaagt gttttgtaaa atttcagtgg 23880
aaatgcacag aaaatcttct ggcctctcat cactgctttt ctcaagcttc ttcagcttaa 23940
caaccccttc cctaacaggt tgggctggcc cagcctagga aaacatcccc atttctaact 24000
tcagccagac ctgcgttgtg tgtctgtgtg ttgagtgagc tggtcagcta acaagtcttc 24060
ttagagttaa aggaggggt gctggccaag agccaacaca ttcttggccc aggagcattg 24120
cttttctgtg aattcattat gccatctggc tgccaatgga actcaaaact tggaaggcga 24180
aggacaatgt tatctgggat tcaccgtgca cagcacccga agtgccaaat tccaggagga 24240
caagageett agecaatgae aacteaetet eeettaetee aeeteettee aagteeaget 24300
caggcccagg aggtgggaga aggtcacaga gcctcaggaa tttccaagtc agagtcccct 24360
ttgaaccaag tatctagatc ccctgaggac ttgatgaagt gatccttaac ccccaagtaa 24420
tcattaaccc ccagaccagc ctcagaactg aaggagattg ttgacccagt gacctggagt 24480
tgaggctcag ggagagatct gccacatgtc tgagggttgc agagcc
<210> 4
<211> 714
<212> PRT
<213> Human
<400> 4
Leu Asn Gln Glu His Leu Glu Glu Leu Gly Arg Trp Gly Ser Ala Pro
Arg Thr His Gln Trp Arg Thr Trp Leu Gln Cys Ser Arg Ala Arg Ala
                                25
Tyr Ala Leu Leu Leu Gln His Leu Pro Val Leu Val Trp Leu Pro Arg
```

Tyr Pro Val Arg Asp Trp Leu Leu Gly Asp Leu Leu Ser Gly Leu Ser 55 Val Ala Ile Met Gln Leu Pro Gln Gly Leu Ala Tyr Ala Leu Leu Ala 70 75 Gly Leu Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr Pro Val Phe 85 90 Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val Gly Thr Phe 110 Ala Val Met Ser Val Met Val Gly Ser Val Thr Glu Ser Leu Ala Pro 120 Gln Ala Leu Asn Asp Ser Met Ile Asn Glu Thr Ala Arg Asp Ala Ala 135 Arg Val Gln Val Ala Ser Thr Leu Ser Val Leu Val Gly Leu Phe Gln 150 Val Gly Leu Gly Leu Ile His Phe Gly Phe Val Val Thr Tyr Leu Ser 170 Glu Pro Leu Val Arg Gly Tyr Thr Thr Ala Ala Ala Val Gln Val Phe 180 185 Val Ser Gln Leu Lys Tyr Val Phe Gly Leu His Leu Ser Ser His Ser 200 Gly Pro Leu Ser Leu Ile Tyr Thr Val Leu Glu Val Cys Trp Lys Leu 215 220 Pro Gln Ser Lys Val Gly Thr Val Val Thr Ala Ala Val Ala Gly Val 230 Val Leu Val Val Lys Leu Leu Asn Asp Lys Leu Gln Gln Leu 250 Pro Met Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly Ala Thr Gly 265 Ile Ser Tyr Gly Met Gly Leu Lys His Arg Phe Glu Val Asp Val Val

		275					280					205			
Gly	Asn		Pro	Ala	Glv	Leu		Pro	Pro	Val	Δla	285 Pro	Δsn	Thr	Gln
_	290				1	295				7013	300	110	71511	1111	OIII
Leu	Phe	Ser	Lys	Leu	Val		Ser	Ala	Phe	Thr		Ala	Val	Val	Gly
305					310					315					320
Phe	Ala	Ile	Ala	Ile	Ser	Leu	Gly	Lys	Ile	Phe	Ala	Leu	Arg	His	Gly
				325					330					335	_
Tyr	Arg	Val		Ser	Asn	Gln	Glu		Val	Ala	Leu	Gly	Leu	Ser	Asn
_			340	_	_			345					350		
Leu	Ile		Gly	Ile	Phe	Gln		Phe	Pro	Val	Ser		Ser	Met	Ser
7		355	77_7	a 1	~ 3	_	360	~-3		_	_	365	_		
Arg	Ser 370	ьец	vaı	GIN	GIU		Thr	GIY	GIŸ	Asn		GIn	Val	Ala	Gly
Δla	Ile	Ser	Ser	T.011	Dha	375	T 011	T 011	Tla	т1.	088	T	T	a1	a 3
385		DCI	Ser	пец	390	TTG	пеп	цец	TTE	395	val	ьуѕ	Leu	GLY	
	Phe	His	Asp	Leu		Lvs	Δla	Val	T.e.u		Δla	Tla	Tla	Tla	400
			1-	405		-1-		• • • •	410	2114	111.0	110		415	Val
Asn	Leu	Lys	Gly		Leu	Arg	Gln	Leu		Asp	Met	Arq	Ser		Trp
		-	420					425		_		5	430		
Lys	Ala	Asn	Arg	Ala	Asp	Leu	Leu	Ile	Trp	Leu	Val	Thr	Phe	Thr	Ala
		435					440					445			
Thr	Ile	Leu	Leu	Asn	Leu		Leu	Gly	Leu	Val	Val	Ala	Val	Ile	Phe
•	450	_	_			455	_	_	_		460				
	Leu	Leu	ьeu	Val		Val	Arg	Thr	Gln		Pro	His	Tyr	Ser	
465		Cln	7707	Dago	470	m1	7	T 1.		475	_	3		~	480
пси	Gly	GIII	vai	485	Asp	THE	Asp	тте		Arg	Asp	vaı	Ата		Tyr
Ser	Glu	Ala	Lvs		Val	Δrα	Glv	Va 1	490	T/a]	Dhe	λrα	Car	495	77-
			500	<u></u>	val	****9	O ₁	505	шуз	vai	FIIC	Arg	510	Ser	Ala
Thr	Val	Tyr	Phe	Ala	Asn	Ala	Glu		Tvr	Ser	Asp	Ala		Lvs	Gln
		515					520					525			
Arg	Cys	Gly	Val	Asp	Val	Asp	Phe	Leu	Ile	Ser	Gln	Lys	Lys	Lys	Leu
	530					535					540				
Leu	Lys	Lys	Gln	Glu		Leu	Lys	Leu	Lys		Leu	Gln	Lys	Glu	Glu
545		7	T	~ 3	550		_	_	_	555			_		560
ьуѕ	Leu	Arg	туѕ	565	Ата	Ата	ser	Pro		GLY	Ala	Ser	Val		Ile
Asn	Val	Δan	Thr		T.211	Glu	λαn	Mot	570	Cor	7 ~~	7 ~~	77 ~ 7	575	7
11011	V 44 1	11011	580	DCI	пси	GIU	нар	585				ASII	vai 590	GIU	Asp
Cys	Lys	Met		Gln	Val	Ser	Ser			Lvs		Glu		Δla	Thr
	=	595					600	1		-1-		605	1105	1114	
Ala	Asn	Gly	${\tt Gln}$	Glu	Asp	Ser	Lys	Ala	Pro	Asp	Gly	Ser	Thr	Leu	Lys
	610					615					620				-
Ala	Leu	Gly	Leu	Pro	Gln	Pro	Asp	Phe	His	Ser	Leu	Ile	Leu	Asp	Leu
625		_	_		630					635					640
GLY	Ala	Leu	Ser		Val	Asp	Thr	Val		Leu	Lys	Ser	Leu		Asn
Tla	Dho	TT	7. ~~~	645	7	a 1		~ 7	650	~3		_		655	_
TTE	Phe	nis	660	Pne	Arg	GIU	тте		val	Glu	Val	Tyr		Ala	Ala
Cvs	His	Ser		Val	Val	Ser	Gln	665 T.A.1	Glu	Λla	<i>0</i> 117	uia	670	Dho	7 ~~
-12		675			· 4.1	201	680	шeu	JIU	n1a	GTÀ	685	rue	FIIE	Asp
Ala	Ser		Thr	Lys	Lys	His		Phe	Ala	Ser	Val		Asn	Ala	Val
	690			-	4 ···	695	- 				700				- 41
Thr	Phe	Ala	Leu	Gln	His		Arg	Pro	Val						
705					710										